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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

HARRIS, TIA M

ART UNIT PAPER NUMBER

2615

DATE MAILED: 01/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/349,232

Applicant(s)

OHSAWA ET AL.

Examiner

Tia M Harris

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

The applicant's amendments to the specification have overcome the objections to the specification. Therefore, the objections are withdrawn.

The title as amended is acceptable.

### ***Drawings***

1. The drawing (Figure 10) was received on 10/30/03. This drawing is acceptable.

### ***Response to Arguments***

2. Applicant's arguments filed 10/30/03 have been fully considered but they are not persuasive. Applicant argues that the Mizoguchi reference (JP 9-37155) does not disclose unit cells of voltage read-out type. However, the examiner does not rely on the teaching of the Mizoguchi reference to teach this feature, but relies on the prior art teaching illustrated in Figure 10 (as specified in the previous office action in item #5). Therefore, the applicant's argument regarding this feature is moot. However, it is clear that the illustration of the unit cell in Figure 10 (prior art) is the same as the unit cell illustrated in Figure 1, which is an illustration of the present invention.

Applicant further argues that Miyazaki (JP 09-331420) does not disclose at least two vertical signal lines in the optical black pixel regions being directly connected with each other. The examiner respectfully disagrees with this assessment of the reference. Clearly illustrated in Drawing 1 of the reference, the vertical signal lines in the optical black pixel region are directly connected with each other through community (common) read out line (7).

At least for the reasons given above, the rejections of the claims are maintained as discussed below.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 2-6, 8-11, 13, 15-18 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claims 2-6, 8-11, 13, 15-18 and 20 recite the limitation "the wiring" in line 3 of claims 2 and 8, line 4 of claims 3 and 9, line 4 of claims 4 and 10, lines 4 and 6 of claim 5, line 2 of claims 6 and 13, lines 4 and 7 of claim 11, line 4 of claims 15-17, lines 4 and 7 of claim 18 and line 2 of claim 20. There is insufficient antecedent basis for this limitation in the claims.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (in regards to Figure 10) in view of Miyazaki (JP 09-331420).

**(Claim 1)** Applicant's admitted prior art discloses a solid state image sensor device (see fig 10) comprising an image sensing cell array portion (1) including a plurality of unit cells (13) of voltage read-out type, the unit cells being arranged in a matrix form on a semiconductor substrate (see fig 10), the image sensing cell array portion having a photosensitive pixel region (composed of photosensitive pixels (13)) and an optical black pixel region (composed of optical black pixels (13')), the unit cells of the photosensitive pixel region for sensing an image (pg 3,

lines 2-3), and the unit cells of the optical black pixel region for defining an optical black level (pg 3, lines 14-17), a selecting circuit (2) for selecting the unit cells of the image sensing cell array portion in a unit of one horizontal line of the image sensing cell array portion, and a plurality of vertical signal lines (18) on which signals are read out from the unit cells selected by the selecting circuit. The admitted prior art does not specifically disclose at least two of the vertical signal lines in the optical black pixel regions being directly connected with each other.

Miyazaki discloses a solid-state image pickup device that at least two of the vertical signal lines in the optical black pixel regions being directly connected with each other (see Drawing 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to directly connect at least of the vertical signal lines in the optical black pixel region disclosed in the Applicant's admitted prior art, in the manner taught by Miyazaki, which is a common circuit arrangement of a solid-state image pickup device.

**(Claim 2)** As best understood by the language of the claim, Miyazaki further discloses the solid-state image sensor device wherein at least one of the vertical signal lines in the optical black pixel region is excluded from being short-circuited with the at least two vertical signal lines by the wiring (section 0029).

**(Claim 3)** As best understood by the language of the claim, Miyazaki further discloses the solid-state image sensor device wherein at least one of the vertical signal lines in the optical black pixel region, which is at the side of the photosensitive pixel region, is excluded from being short-circuited with the at least two vertical signal lines by the wiring (section 0029).

**(Claim 4)** As best understood by the language of the claim, Miyazaki further discloses the solid-state image sensor device wherein at least one of the vertical signal lines in the optical

black pixel region, which is at the opposite side of the photosensitive pixel region, is excluded from being short-circuited with the at least two vertical signal lines by the wiring (section 0029).

**(Claim 5)** As best understood by the language of the claim, Miyazaki further discloses the solid-state image sensor device wherein at least one of the vertical signal lines in the optical black pixel region, which is at the side of the photosensitive pixel region, is excluded from being short-circuited with the at least two vertical signal lines by the wiring, and wherein at least one of the vertical signal lines in the optical black pixel region, which is at the opposite side of the photosensitive pixel region, is excluded from being short-circuited with the at least two vertical signal lines by the wiring (section 0029).

**(Claim 6)** As best understood by the language of the claim, Miyazaki further discloses the solid-state image sensor device wherein the wiring causes levels of the readout signals of the at least two vertical signal lines to be averaged (section 0017).

8. Claims 7-11, 13-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki in view of Shimoyama (5355164).

**(Claims 7 and 14)** Miyazaki discloses a solid-state image sensor device as discussed above with reference to claim 1. Miyazaki does not specifically disclose the image sensing cell array portion has a plurality of optical black pixel regions having optical black levels different from each other.

Shimoyama discloses a method and apparatus of correcting image read signals by removing the influence of dark current therefrom. This method and apparatus can be configured for a linear sensing device or area-sensing device (col 5, lines 12-16). Shimoyama discloses the image sensing cell area has a plurality of optical black pixel regions (BC, DC).

It would have been obvious to one having ordinary skill in the art at the time the invention was made that the image sensing array disclosed by Miyazaki would include a

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plurality of optical black pixel regions, in the manner taught by Shimoyama which is a common configuration of sensors used in detecting and removing the influence of dark current.

**(Claims 8 and 15)** See the rejection of claim 2 above.

**(Claims 9 and 16)** See the rejection of claim 3 above.

**(Claims 10 and 17)** See the rejection of claim 4 above.

**(Claims 11 and 18)** See the rejection of claim 5 above.

**(Claims 13 and 20)** See the rejection of claim 6 above.

9. Claims 12 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki in view of Shimoyama as applied to claim 7 above, and further in view of Matsunaga (US 6239839 B1).

Miyazaki in view of Shimoyama discloses a solid-state image sensor device as discussed above. Shimoyama further discloses the sensor comprises at least two optical black pixel regions (BC, DC), the unit cells of one (DC) of which includes a photoelectric conversion element and the unit cells of the other (BC) of which includes no photoelectric conversion element (col 3, lines 45-63). Shimoyama does not specifically disclose the photoelectric conversion elements are PN diodes. However, it is notoriously well known in the art for photoelectric conversion elements to be configured as PN junction diodes as taught by Matsunaga (col 8, lines 53-58; col 10, lines 13-29). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made that photoelectric conversion elements disclosed by Shimoyama would be pn junction diodes, as taught by Matsunaga which is a notoriously well known configuration for photoelectric conversion elements.

**Conclusion**

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tia M Harris whose telephone number is 703-305-4807. The examiner can normally be reached on M-F 8:30 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Christensen can be reached on 703-308-9644. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

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1/24/04



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